

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

SELF-MONITORING PROGRAM

**FOR
CONOCOPHILLIPS COMPANY**

**SAN FRANCISCO REFINERY
1380 SAN PABLO AVE., RODEO, CA
CONTRA COSTA COUNTY**

ORDER NO. R2-2005-0026

CONSISTS OF

PART A

AND

PART B

PART A

A. AUTHORITY AND PURPOSE

For discharges of waste to land, water quality monitoring is required pursuant to the California Code of Regulations, Division 2, Title 27, Subdivision 1, Chapter 3, Subchapter 3, Sections 20380 through 20435. The principal purposes of a self-monitoring program (SMP) are:

1. To document compliance with waste discharge requirements and prohibitions established by the Water Board;
2. To facilitate self-policing by the waste Discharger in the prevention and abatement of pollution arising from the waste discharge;
3. To develop or assist in the development of effluent standards of performance, and toxicity standards;
4. To prepare water and wastewater quality inventories; and
5. To assist the Discharger in complying with the requirements of Title 27.

B. MONITORING REQUIREMENTS

Monitoring refers to the measurement and sampling of environmental media, the making of standard observations in and around waste management units (WMUs) and Class II surface impoundments (surface impoundments), the inspection of containment and control facilities, and the monitoring of waste disposed in each WMU or surface impoundment. Part B of this SMP indicates the specific types of monitoring required as well as the monitoring frequency and reporting schedule. The following defines the types of monitoring that shall be required.

1. Monitoring Environmental Media

The Water Board shall require monitoring of any of the following environmental media:

- a. Groundwater
- b. Surface water (streams, stormwater runoff, etc.)
- c. Soil/Sediment

Sample collection, storage, and analyses shall be performed according to the most recent version of EPA Standard Methods or in accordance with an approved sampling and analysis plan.

All required water and waste analyses shall be performed by a California State-approved laboratory. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign all reports of such work submitted to the Water Board.

All monitoring instruments and devices used to fulfill the prescribed SMP shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices.

2. Definition of Terms

- a. Grab Sample

A grab sample is a discrete sample collected at any time.

b. Composite Sample

A composite sample is a sample composed of individual grab samples mixed in proportions varying not more than plus or minus five percent from the instantaneous rate of waste flow corresponding to each grab sample collected at regular intervals not greater than one hour, or collected by the use of continuous automatic sampling devices capable of attaining the proportional accuracy stipulated above throughout the period of discharge or 24 consecutive hours, whichever is shorter.

c. Receiving Waters

Receiving waters refers to any water that actually or potentially receives surface or groundwater that pass into, through, or under the WMUs or contaminated soils. The receiving waters are the groundwater beneath and adjacent to the WMUs, the surface runoff from the site, and the drainage ditches surrounding the site. San Francisco Bay or its subbasins or nearby streams into which water from the site discharges are considered receiving waters.

d. Standard Observations

Standard observations refer to observations within the limits of each WMU and surface impoundment, at their perimeter, and of the receiving waters beyond their limits. Standard observations include:

i. WMUs and surface impoundments:

- (1) Evidence of ponded water at any point on the WMU;
- (2) Evidence of odors, including their presence or absence, characterization, source, and distance of travel from the WMU or surface impoundment;
- (3) Evidence of algal or other unusual growth;
- (4) Precipitation of sludge or minerals, quantity, nature and chemical composition;
- (5) Evidence of erosion at a WMU or surface impoundment; and
- (6) Daylighted waste at a WMU.

ii. Perimeter of WMUs and surface impoundments:

- (1) Evidence of liquid leaving or entering the WMU or surface impoundment, estimated size of affected area and flow rate (show affected area on map);
- (2) Evidence of algal or other unusual growth;
- (3) Precipitation of sludge or minerals, quantity, nature and chemical composition;
- (4) Evidence of odors, including their presence or absence, characterization, source, and distance of travel from the WMU or surface impoundment;
- (5) Evidence of erosion at a WMU or surface impoundment; and
- (6) Daylighted waste at a WMU.

iii. Receiving Waters:

- (1) Floating and suspended materials of waste origin: including their presence or absence, source, and size of affected area;
- (2) Discoloration and turbidity: description of color, source, and size of affected area;
- (3) Evidence of odors, presence or absence, characterization, source, and distance of travel from source;

- (4) Evidence of beneficial use: presence of water associated with wildlife;
 - (5) Flow rate; and
 - (6) Weather conditions (wind direction and estimated velocity, total precipitation since last observation).
- iv. Facilities Inspections
- Facilities inspections refer to the inspection of all containment and control structures and devices associated with WMUs and surface impoundments. Containment and control facilities include the following:
- (1) Sedimentation Pond(s);
 - (2) Perimeter diversion channels;
 - (3) Soil and groundwater remediation systems.

C. REPORTING REQUIREMENTS

Reporting responsibilities of waste discharge are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code (CWC) and this Regional Water Board's Resolution No.73-16 and Title 27. The monitoring frequency and reporting schedule are indicated in Part B of this SMP. Each monitoring report shall include the following information:

1. Transmittal Letter

A letter transmitting essential points shall be included in each monitoring report. The Transmittal Letter (letter) shall include a discussion of the essential points contained in the self-monitoring report. This discussion shall include a summary of violations that occurred during the reporting period and actions taken or planned to correct the problem. If no violations have occurred in the last report period, this shall be stated. The letter shall also certify the completion of all monitoring requirements. The letter shall be signed by the Discharger's principal Executive Officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge (see Provision No. 28).

2. Compliance Evaluation Summary

Each Semiannual and/or Annual monitoring report shall include a compliance evaluation summary containing the following information:

- a. A summary and certification of completion of all environmental media monitoring, standard observations, and facilities inspections (Semiannual Reporting);
- b. A graphic demonstration (e.g., potentiometric surface contour maps) of hydraulic containment and/or separation from groundwater beneath and around the perimeter of WMUs and surface impoundments where required (Semiannual Reporting);
- c. Map(s) or aerial photograph(s) showing observation and monitoring station locations (Semiannual Reporting);
- d. A written discussion of groundwater analyses indicating any change in the quality of the groundwater. Increasing pollutant concentration trends as indicated by a non-parametric statistical trend analysis (such as a Mann-Kendall analysis) of concentration trends at the POC for any WMU or surface impoundment shall be noted and flagged, and any exceedance of Trigger Levels within any perimeter segment well shall be noted and flagged (Semiannual Reporting);

- e. A cover letter signed by the laboratory director whose name appears on the laboratory certification, indicating that he/she has supervised all analytical work in his/her laboratory (Semiannual Reporting);
- f. A graphic or tabular presentation, in conjunction with potentiometric contour surface maps, detailing the velocity and direction of groundwater flow under/around each WMU and surface impoundment. Data presentation shall be based upon the past and present water level elevations and pertinent visual observations and shall include a written discussion (Annual Report Only).

3. Appendices

Include the following information in appendices, unless the information is already contained in an approved Sampling and Analysis Plan. The appendices need not include the actual laboratory analytical data sheets and quality assurance/quality control (QA/QC) report summary, however, this information shall be provided upon request.

- a. New boring and well logs;
- b. Method and time of water level measurements;
- c. Purging methods and results including the type of pump used, pump placement in the well, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity, calibration of the field equipment, pH, temperature, conductivity, and turbidity measurements, well recovery time, and method of disposing of the purge water;
- d. Sampling procedures, field and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other relevant observations;
- e. Documentation of laboratory results, analytical methods, detection limits, and QA/QC procedures for the required sampling, including:
 - i. Laboratory statements of results of analyses;
 - ii. Descriptions of analytical methods used (Note: If methods other than EPA approved methods or Standard Methods are used, the exact methodology must be submitted for review and approval by the Executive Officer prior to use.);
 - iii. Actual detection limits for each sample results (**The methods of analyses and detection limits must be appropriate for the expected contaminants and concentrations**); and
 - iv. Laboratory QA/QC information and results including analytical methods, detection limits, recovery rates, explanations for low recovery rates (less than 80%), equipment and method blanks, spikes and surrogates, and QA/QC sample frequency.
- f. A non-parametric statistical analysis of concentration trends (Annual Report only).

D. ANNUAL REPORTING

The Discharger shall submit an annual self-monitoring report to the Water Board covering the previous calendar year. The annual report must summarize all monitoring, investigation, and remedial activities that have occurred in the previous year. The annual report shall include the following information **for each monitoring event during**

the year required pursuant to this SMP, in addition to the transmittal letter and appendices described in Sections C.1, C.2, and C.3 of this SMP:

1. Graphic Presentation

Include site maps (plot plans) for each aquifer or water-bearing zone monitored that are drawn to a scale that remains constant from reporting period to reporting period. Line or bar graphs are helpful to illustrate variations in groundwater elevations, phase-separated product thickness, and dissolved chemical concentrations with time. These maps and graphs shall include the following information:

- a. Known or probable contaminant sources;
- b. Well locations;
- c. Groundwater elevation contours;
- d. Inferred groundwater flow direction(s);
- e. Identify wells containing phase-separated product;
- f. Extent of dissolved chemical constituents presented in map layout (e.g., isoconcentration maps, chemical box data maps, etc.); and
- g. Appropriate analytical results.
- h. Geologic cross sections are required if new data is available and/or the previous interpretation of subsurface conditions has changed. When required, geologic cross sections shall include the following:
 - i. Vertical and lateral extent of contamination;
 - ii. Contaminant sources;
 - iii. Geologic structures;
 - iv. Soil lithology;
 - v. Water table/piezometric surfaces;
 - vi. Sample locations;
 - vii. Sample analytical results; and
 - viii. Subsurface utilities and any other potential natural or manmade conduits for contaminant migration.

2. Tabular Presentation

Present all of the following data in one or more tables to show a chronological history and allow quick and easy reference. The table(s) shall include the following information:

- a. Well designations;
- b. Well location coordinates (latitude and longitude);
- c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation);
- d. Groundwater depths;
- e. Groundwater elevations;
- f. Horizontal groundwater gradients;
- g. Vertical groundwater gradients (including comparison wells from different zones);
- h. Phase-separated product elevations;
- i. Phase-separated product thickness;
- j. Current analytical results (including analytical method and detection limits for each constituent);

- k. Historical analytical results for the most recent four sampling events;
- l. Measurement dates;
- m. Groundwater extraction, including:
 - i. Average daily extraction rate;
 - ii. Total volume extracted for monitoring period; and
 - iii. Annual cumulative total volume extracted.
- n. Estimate of contaminant volume extracted (reported in gallons) including:
 - i. Average daily removal rate;
 - ii. Total volume removed for monitoring period; and
 - iii. Annual cumulative total volume removed.

3. Discussion

Provide a discussion of the field and laboratory results that includes the following information:

- a. Data Interpretations;
- b. Conclusions;
- c. Recommendations;
- d. Newly implemented or planned investigations and remedial measures;
- e. Data anomalies;
- f. Variations from protocols;
- g. Conditions of wells; and

E. CONTINGENCY REPORTING

1. The Discharger shall report by telephone to the Water Board, any discharge from the disposal area immediately after it is discovered. The Discharger shall submit a written report with the Water Board within five working days of discovery of any discharge. The written report shall contain the following information:
 - a. Nature of the waste or pollutant;
 - b. Estimate of the quantity involved;
 - c. Approximate rate of overflow;
 - d. Duration of incident;
 - e. Cause of the release;
 - f. Estimated size of affected area;
 - g. Corrective measures that have been taken or planned, and a schedule of these measures;
 - h. Nature of effects (e.g., pertinent observations, analyses, etc.);
 - i. The persons/agencies notified;
 - j. A map showing the location(s) of any discharge, seepage or dike rupture;
 - k. A photo of the impacted area as soon as possible after the discharge; and
 - l. A photo of the impacted area at the completion of clean up (this photograph may be supplied following submittal of the Release Report if cleanup requires more than five working days).
2. The Discharger shall submit a written report to the Water Board within seven working days of determining that a statistically significant difference occurred between a self-monitoring sample set and an approved WQPS or a trigger level exceedance in a

perimeter segment-monitoring well. The written report shall indicate what WQPS(s) have been exceeded. The Discharger shall immediately resample at the compliance point(s) where this difference has been found and analyze another sample set of at least four portions split in the laboratory from the source sample.

3. If re-sampling and analysis confirms the earlier finding of a statistically significant difference between self-monitoring results and WQPS(s) the Discharger shall submit to the Water Board an amended Report of Waste Discharge as specified in Title 27, Section 20420 for establishment of an Evaluation Monitoring program meeting the requirements of Title 27, Section 20425.
4. Within 180 calendar days of determining statistically significant evidence of a release, the Discharger shall submit to the Water Board an engineering feasibility study for a Corrective Action Plan (CAP) necessary to meet the requirements of Title 27, Section 20430. At a minimum, the feasibility study shall contain a detailed description of the corrective action measures that could be taken to achieve background concentrations for all COCs.

F. ELECTRONIC REPORTING

1. Geotracker Requirements

The State Board recently adopted regulations requiring electronic report and data submittal to Geotracker. The text of the regulations can be found at the following URL:

http://www.waterboards.ca.gov/ust/cleanup/electronic_reporting/docs/final_electronic_regs_dec04.pdf

Starting July 1, 2005, parties responsible for cleanup of pollution at sites overseen by the Regional Water Board's Land Disposal Programs are required to submit over the internet, the following information electronically:

- a. Groundwater analytical data;
- b. Surveyed locations of monitoring wells;
- c. Boring logs describing monitoring well construction; and
- d. Portable data format (PDF) copies of all reports (the document in its entirety [signature pages, text, figures, tables, etc.] must be saved as a single PDF file).

Note that the Discharger is still responsible for submitting one hard copy of all reports pursuant to this Order. Individual Regional Water Boards may require direct submittal of electronic reports and correspondence in addition to the State Board's Geotracker requirements.

2. Data Tables

Upon request, monitoring results shall also be provided electronically in Microsoft Excel® or similar spreadsheet format to provide an easy to review chronological summary of site data, and to facilitate data computations and/or plotting that Water Board staff may undertake during the review process. Data tables submitted in electronic spreadsheet format will not be included in the case file for public review and should therefore be submitted on CD or diskette and included with the print report.

Electronic tables shall include the following information:

- a. Well designations;
- b. Well location coordinates (latitude and longitude);
- c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation);

- d. Groundwater depths and elevations (water levels);
- e. Phase-separated product thicknesses and elevations;
- f. Current analytical results by constituent of concern (including detection limits for each constituent);
- g. Historical analytical results (including the past four sampling events); and
- h. Measurement dates.

G. MAINTENANCE OF WRITTEN RECORDS

The Discharger shall maintain information required pursuant to this SMP for a **minimum of five years**. The five-year period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Water Board.

PART B

A. GROUNDWATER MONITORING

1. Groundwater samples shall be monitored at the following compliance points:
 - a. Seasonal Products Storage Tank Area;
 - b. Upper Tank Farm;
 - c. Lower Tank Farm (including Unit 76 Area);
 - d. Tank 302 / Well 181 Area;
 - e. Primary Storm Basin;
 - f. Main Storm Basin;
 - g. Effluent Safety Basin;
 - h. Perimeter Wells;
 - i. Inactive WMUs.
2. The Discharger shall sample groundwater from the extraction trench quarterly and include results in the facility Semiannual Report.

B. SURFACE WATER, STORMWATER, AND WASTEWATER MONITORING

The Discharger shall sample surface water, stormwater, and wastewater in surface impoundments if not completed as part of the facility's NPDES permit. Monitoring results shall be documented in the facility Annual Report. If these environmental media are not already monitored, the Discharger shall propose sampling frequency and analytes.

C. STANDARD OBSERVATIONS

Standard observations (Part A; Section B.2.d.) shall be made for all WMUs, interior monitoring areas, surface impoundments, and containment structures as noted in Section E, Table B.1. Violations must be reported to the Water Board immediately. An "exception only" summary of inspection results shall be documented in the facility Annual Report.

D. FACILITIES MONITORING

The Discharger shall inspect all facilities to ensure proper and safe operation once per week. Violations must be reported to the Water Board immediately. An "exception only" summary of inspection results shall be documented in the facility Annual Report. The facilities to be monitored shall include, but not be limited to:

1. General operation of the groundwater remediation systems;
2. Valves and piping, including wastewater transfer piping associated with the facility's groundwater remediation systems;
3. Exposed WMU liners or surface impoundment liners; and
4. Surface water perimeter diversion trenches or channels that may be impacted by releases from active and/or inactive WMUs.

Note: Summary discussion shall include "exception only" reporting.

E. FREQUENCY OF OBSERVATIONS

Table B.1

Location	Description	Frequency
Surface Impoundments	Standard observation of the Primary Storm Basin and Main Storm Basin as described in Part A; Section B.2.d.	Daily
Effluent Safety Basin	Standard observations as described in Part A; Section B.2.d.	Daily
E-003 Outfall Area	Monitor potential accumulation and release of petroleum hydrocarbons	Daily
Former PG&E Saltwater Intake	Monitor potential accumulation and release of petroleum hydrocarbons	Daily
Former PG&E Saltwater Outfall Ditch	Monitor potential accumulation and release of petroleum hydrocarbons	Daily
Unit 76 Active Skimmer Recovery System	Monitor hydrocarbon recovery and product accumulation in wells	Weekly
Inactive WMUs and Land Treatment Area	Standard observations as described in Part A; Section B.2.d.	Semiannual

F. REPORTING SCHEDULE

The Discharger shall submit self-monitoring reports per the schedule indicated in Table B2. Reports due at the same time may be combined into one report for convenience, provided monitoring activities and results pertaining to each monitoring period are clearly distinguishable.

Any potential or direct threats to water quality shall be reported immediately as outlined in Part A., Section E (Contingency Reporting).

Table B2. Reports and Due Dates

Report	Reporting Frequency	Period That Samples Are to be Collected	Report Due Date
Winter/Spring	First Semiannual	April / May	August 31 st
Summer/Fall	Second Semiannual / Annual Report	September / October	March 31 st

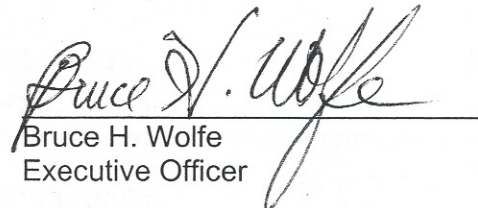
Note: The annual report shall be combined with the Discharger's Summer/Fall Second Semiannual report.

G. GROUNDWATER SELF-MONITORING PROGRAM (SMP)

Attached Table 2 provides a summary overview of the Groundwater Self-Monitoring Program. Attached Table 3 provides a detailed list of groundwater monitoring wells and corresponding sampling parameters for the current SMP.

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

- Has been developed in accordance with the procedures set forth in this Water Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Water Board's Order No. R2-2005-0026.
- Is effective on the date shown below.
- May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.


Bruce H. Wolfe
Executive Officer

Date Ordered: June 15, 2005

Attachments: Table 2. Groundwater Monitoring Program Summary by Quarter
Table 3. Groundwater Monitoring Program Sampling Parameters
Table 4. Acronym List

TABLE 2
GROUNDWATER SELF-MONITORING PROGRAM SUMMARY BY QUARTER
CONOCOPHILLIPS SAN FRANCISCO REFINERY, RODEO

1st Quarter Jan.-Mar. (no report – data incl. in Semi Annual Rpt)	2nd Quarter Apr.-Jun. (Semi-Annual Report - due Aug 31)	3rd Quarter Jul.-Sept. (no report – data incl. in Annual Rpt)	4th Quarter Oct.-Dec. (Annual Report due Mar 31)
APSA Gauging	APSA Gauging	APSA Gauging	APSA Gauging
Sampling of Effluent from GW / FPLH Recovery Systems	Sampling of Effluent from GW / FPLH Recovery Systems	Sampling of Effluent from GW / FPLH Recovery Systems	Sampling of Effluent from GW / FPLH Recovery Systems
	Surface Impoundments (PSB/MSB) and ESB		Surface Impoundments (PSB/MSB) and ESB
	Refinery and Tormey GW Basin Perimeters		Refinery and Tormey GW Basin Perimeters
	Downgradient Trench Wells		Downgradient Trench Wells
	Former PG&E Power Plant Site		Former PG&E Power Plant Site
	Inactive WMUs 5 and 8		Inactive WMUs 4, 5, 6, 6A, 6B, 6C, 7, 8, 9A, 9B
			Annual gauging for Potentiometric surface map (site-wide)

Notes:

APSA = Aboveground Petroleum Storage Act
GW = Groundwater
FPLH = Free Phase Liquid Hydrocarbon
WMU = Waste Management Unit

PSB = Primary Storm Basin
MSB = Main Storm Basin
ESB = Effluent Safety Basin

TABLE 3
GROUNDWATER SELF-MONITORING PROGRAM SAMPLING PARAMETERS
CONOCOPHILLIPS SAN FRANCISCO REFINERY, RODEO

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	*Well No.	Area Monitored	Dissolved Antimony EPA 6010B	Dissolved Arsenic EPA 6010B	Dissolved Barium EPA 6010B	Dissolved Cadmium EPA 6010B	Dissolved Chromium EPA 6010B	Dissolved Lead EPA 6010B	Dissolved Mercury EPA 7470A	Nickel / Selenium / Vanadium / Aric EPA 6010B	Dissolved Nickel EPA 6010B	Dissolved Vanadium EPA 6010B	AVOCs + MTBE EPA 8260B	TPH-D EPA 3630C/ 8015M	VOCs EPA 8260B	SVOCs EPA 8270C	pH ⁹ EPA 9040B	PCBs EPA 8082
1	EEl-21	PSB / MSB	--	SA	SA	--	A	--	--	--	--	--	SA	SA	--	SA ^a	--	--
2	MW-24	PSB	--	SA	SA	--	A	--	--	--	--	--	SA	SA	--	SA ^b	--	--
3	MW-27	PBS	--	SA	SA	--	A	--	--	--	--	--	SA	SA	--	SA ^a	--	--
4	MW-9R	MSB	--	SA	SA	--	A	--	--	--	--	--	SA	SA	--	SA ^a	--	--
5	MW-16	MSB	--	SA	SA	--	A	--	--	--	--	--	SA	SA	--	SA ^a	--	--
6	MW-22	ESB	--	SA	SA	--	A	SA	A	--	--	--	--	SA	SA	SA ^a	--	--
7	MW-158	ESB / RGBP	--	SA	SA	--	A	SA	A	--	--	--	--	SA	SA	SA ^a	--	--
8	MW-165	ESB / RGBP	--	SA	SA	--	A	SA	A	--	--	--	--	SA	SA	SA ^a	--	--
9	MW-4-8	WMU 4	--	--	--	--	--	BA	--	--	--	--	A	A	--	A ^a	--	--
10	MW-4-9	WMU 4	--	--	--	--	--	BA	--	--	--	--	A	A	--	A ^a	--	--
11	MW-4-10	WMU 4	--	--	--	--	--	BA	--	--	--	--	A	A	--	A ^a	--	--
12	EEl-8	WMU 5, 8 / RGBP ^c	--	SA	SA	SA	SA	SA	--	--	--	--	--	--	SA	SA	SA	--
13	EEl-10	WMU 5, 8 / RGBP ^c	--	SA	SA	SA	SA	SA	--	--	--	--	--	--	SA	SA	SA	--
14	MW-2B	WMU 5, 8 / RGBP ^c	--	SA	SA	SA	SA	SA	--	--	--	--	--	--	SA	SA	SA	--
15	MW-6	WMU 5, 8 / RGBP ^c	--	SA	SA	SA	SA	SA	--	--	--	--	--	--	SA	SA	SA	--
16	MW-157	WMU 5, 8 / RGBP ^c	--	SA	SA	SA	SA	SA	--	--	--	--	--	--	SA	SA	SA	--
17	MW-6-35	WMU 6, 6A, 6B	--	--	--	--	--	A	BA	--	--	--	A	A	--	A ^a	--	--
18	MW-6-36	WMU 6, 6A, 6B	--	--	--	--	--	A	BA	--	--	--	A	A	--	A ^a	--	--
19	MW-6A-1	WMU 6, 6A, 6B	--	--	--	--	--	A	BA	--	--	--	A	A	--	A ^a	--	--
20	MW-6B-1	WMU 6, 6A, 6B	--	--	--	--	--	A	BA	--	--	--	A	A	--	A ^a	--	--
21	MW-6B-3	WMU 6, 6A, 6B	--	--	--	--	--	A	BA	--	--	--	A	A	--	A ^a	--	--
22	MW-6B-2	WMU 6, 6A, 6B, 6C	--	--	--	--	--	A	A	--	--	--	A	A	--	A ^a	--	--
23	MW-137	WMU 6C	--	--	--	--	--	A	A	--	--	--	A	A	--	A ^b	--	--
24	MW-138	WMU 6C	--	--	--	--	--	A	A	--	--	--	A	A	--	A ^b	--	--
25	MW-139	WMU 6C	--	--	--	--	--	A	A	--	--	--	A	A	--	A ^a	--	--
26	MW-211	WMU 6C	--	--	--	--	--	A	A	--	--	--	A	A	--	A ^a	--	--

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	*Well No.	Area Monitored	Dissolved Antimony EPA 6010B	Dissolved Arsenic EPA 6010B	Dissolved Barium EPA 6010B	Dissolved Cadmium EPA 6010B	Dissolved Chromium EPA 6010B	Dissolved Lead EPA 6010B	Dissolved Mercury EPA 7470A	Nickel / Selenium / Vanadium / Anic EPA 6010B	Dissolved Nickel EPA 6010B	Dissolved Vanadium EPA 6010B	AVOCs + MTBE EPA 8260B	TPH-D EPA 3630C/ 8015M	VOCs EPA 8260B	SVOCs EPA 8270C	pH ⁹ EPA 9040B	PCBs EPA 8082
27	MW-7-26	WMU 7	--	A	A	--	BA	A	--	--	--	--	--	--	--	A	--	--
28	MW-7-27	WMU 7	--	A	A	--	BA	A	--	--	--	--	--	--	--	A	--	--
29	MW-7-28	WMU 7	--	A	A	--	BA	A	--	--	--	--	--	--	--	A	--	--
30	MW-9A-1	WMU 7, 9A, 9B	--	A	A	--	BA	A	A	--	--	--	A	A	--	A	--	--
31	MW-9A-3	WMU 9A, 9B	--	--	--	--	BA	A	BA	--	--	--	A	A	--	A ^a	--	--
32	MW-9A-4	WMU 9A, 9B	--	--	--	--	BA	A	BA	--	--	--	A	A	--	A ^a	--	--
33	MW-9B-1	WMU 9A, 9B	--	--	--	--	BA	A	BA	--	--	--	A	A	--	A ^a	--	--
34	MW-9B-2	WMU 9A, 9B	--	--	--	--	BA	A	BA	--	--	--	A	A	--	A ^a	--	--
35	EEL-11	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
36	EEL-13	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
37	MW-146R	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
38	MW-148	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
39	MW-150	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
40	MW-155	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
41	MW-172	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
42	MW-177	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
43	MW-178	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
44	MW-179	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
45	MW-180	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
46	MW-181	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
47	MW-196	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
48	MW-197	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
49	MW-198	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
50	MW-199	RGBP ^d	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
51	MW-159	RGBP ^e	--	SA	SA	--	BA	SA	BA	--	--	--	--	SA	SA	SA ^a	--	--
52	MW-160	RGBP ^e	--	SA	SA	--	BA	SA	BA	--	--	--	--	SA	SA	SA ^b	--	--
53	MW-161	RGBP ^e	--	SA	SA	--	BA	SA	BA	--	--	--	--	SA	SA	SA ^a	--	--
54	MW-166	RGBP ^e	--	SA	SA	--	BA	SA	BA	--	--	--	--	SA	SA	SA ^a	--	--

Self-Monitoring Program
WDR - ConocoPhillips San Francisco Refinery
Page 56

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	*Well No.	Area Monitored	Dissolved Antimony EPA 6010B	Dissolved Arsenic EPA 6010B	Dissolved Barium EPA 6010B	Dissolved Cadmium EPA 6010B	Dissolved Chromium EPA 6010B	Dissolved Lead EPA 6010B	Dissolved Mercury EPA 7470A	Nickel / Selenium / Vanadium / Anic EPA 6010B	Dissolved Nickel EPA 6010B	Dissolved Vanadium EPA 6010B	AVOCs + MTBE EPA 8260B	TPH-D EPA 3630C/ 8015M	VOCs EPA 8260B	SVOCs EPA 8270C	pH ⁹ EPA 9040B	PCBs EPA 8082
55	MW-188	RGBP ^f	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
56	MW-189	RGBP ^f	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
57	MW-190	RGBP ^f	--	SA	SA	SA	A	SA	--	--	--	--	--	--	SA	SA	SA	--
58	MW-191	RGBP ^f	--	SA	SA	SA	A	SA	--	--	--	--	--	--	SA	SA	SA	--
59	MW-192	RGBP ^f	--	SA	SA	SA	A	SA	--	--	--	--	--	--	SA	SA	SA	--
60	MW-193	RGBP ^f	--	SA	SA	--	A	SA	SA	--	--	--	--	--	SA	SA	--	--
61	MW-194	RGBP ^f	--	SA	SA	--	A	SA	SA	--	--	--	--	--	SA	SA	--	--
62	MW-195	RGBP ^f	--	SA	SA	--	A	SA	SA	--	--	--	--	--	SA	SA	--	--
63	MW-103	TGBP	--	SA	SA	--	BA	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
64	MW-104	TGBP	--	SA	SA	--	BA	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
65	MW-120	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	--	--	--
66	MW-121	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
67	MW-123	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
68	MW-124	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
69	MW-125	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
70	MW-126	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
71	MW-127	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
72	MW-129	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
73	MW-144	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
74	MW-173	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
75	MW-174	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
76	MW-175	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
77	MW-183	TGBP	--	--	--	--	--	SA	--	--	--	--	SA	SA	--	SA ^a	--	--
78	R00W001	PG&E OPP	SA	SA	--	--	SA	SA	--	--	SA	SA	--	SA	--	SA ^a	--	--
79	R00W002	PG&E OPP	SA	SA	--	--	SA	SA	--	--	SA	SA	--	SA	SA	SA	--	SA
80	R00W003	PG&E OPP	A	A	--	--	A	A	--	--	A	A	--	A	A	A ^a	--	--
81	R00W008	PG&E OPP	SA	SA	--	--	SA	SA	--	--	SA	SA	--	SA	--	SA ^a	--	--
82	R00W009	PG&E OPP	A	A	--	--	A	A	--	--	A	A	--	A	A	A ^a	--	--
83	R00W010	PG&E OPP	A	A	--	--	A	A	--	--	A	A	--	A	A	A ^a	--	--
84	R00W011	PG&E OPP	SA	SA	--	--	SA	SA	--	--	SA	SA	--	SA	--	SA ^a	--	--
85	R00W012	PG&E OPP	SA	SA	--	--	SA	SA	--	--	SA	SA	--	SA	--	SA ^a	--	--
86	R00W013	PG&E OPP	SA	SA	--	--	SA	SA	--	--	SA	SA	--	SA	SA	SA	--	SA

Notes:

- ^a Sample will be analyzed for SVOCs by EPA 8270 if TPH-D detected at >2.0 mg/L.
- ^b Sample will be extracted and held for analysis. Sample will be analyzed for SVOCs by EPA 8270C if TPH-D detected at >2.0 mg/L.
- ^c Wells located between the PG&E Discharger Channel and the ESB Discharge Channel.
- ^d Wells located north of the PG&E Discharge Channel.
- ^e Wells located south of the ESB Discharge Channel.
- ^f Wells located downgradient of the interceptor trench.
- ^g All samples field analyzed for pH.
- * Samples shall be analyzed for full suite of COCs once every five years

WMU	=	Waste Management Unit
TGBP	=	Tormey Groundwater Basin Perimeter
RGBP	=	Refinery Groundwater Basin Perimeter
PSB	=	Primary Storm Basin
MSB	=	Main Storm Basin
ESB	=	Effluent Safety Basin
PG&E OPP	=	Pacific Gas and Electric Oleum Power Plant
SA	=	Semi-Annual Sampling (May and November of each calendar year)
A	=	Annual Sampling (May of each calendar year)
BA	=	Biennial Sampling (even numbered years)

Table 4. Acronym List

µg/L	Microgram per Liter (part per billion, typically in water)
µS/cm	Micro-Siemens per Centimeter (units of electrical conductivity)
A	Annual Sampling (May of each calendar year)
APSA	Aboveground Petroleum Storage Act
AVOC	Aromatic Volatile Organic Compounds
BA	Biennial Sampling (even numbered years)
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene
CAM	California Assessment Metals
CAP	Corrective Action Plan
CCR	California Code of Regulations
CD	Compact Disk
CLs	Concentration Limits
COC	Constituents of Concern
CSU	Container Storage Unit
CWC	California Water Code
DMP	Detection Monitoring Program
DTSC	Department of Toxic Substances Control
DUP	Duplicate
EPA	Environmental Protection Agency
ESB	Effluent Safety Basin
ESLs	Environmental Screening Levels
FPLH	Free-Phase Liquid Hydrocarbon
gpm	Gallons per Minute
GW	Groundwater
H&SC	Health and Safety Code
LTA	Land Treatment Area
MCL	Maximum Contaminant Level
mg/kg	Milligram per Kilogram (part per million, typically in soil)
mg/L	Milligram per Liter (part per million, typically in water)
MSB	Main Storm Basin
MTBE	Methyl Tertiary-Butyl Ether
MUN	municipal
MW	Monitoring Well
NPDES	National Pollutant Discharge Elimination System
OES	Office of Emergency Services
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Poly Chlorinated Biphenyls
PDF	Portable Document Format
PG&E	Pacific Gas and Electric
PG&E OPP	Pacific Gas and Electric Oleum Power Plant
POC	Point of Compliance
PSB	Primary Storm Basin
QA/QC	Quality Assurance / Quality Control
RCRA	Resource Conservation and Recovery Act
RGBP	Refinery Groundwater Basin Perimeter
SA	Semi-Annual Sampling (May and November of each calendar year)
SCR	Site Cleanup Requirements
SMP	Self-Monitoring Program

SVOC	Semi-volatile Organic Compounds
SWAT	Solid Waste Assessment Test
TCLP	Toxicity Characteristic Leaching Procedure
TGBP	Tormey Groundwater Basin Perimeter
TPH	Total Petroleum Hydrocarbon
TPH-D	Total Petroleum Hydrocarbon - Diesel
VOC	Volatile Organic Compounds
WDR	Waste Discharge Requirements
WET	Waste Extraction Test
WMU	Waste Management Unit
WQPS	Water Quality Protection Standard